

## CLAIMS

1. A method for fabricating a magnetic head, including the steps of:  
fabricating portions of said magnetic head including a P1 pole, a write gap layer and a P2 pole tip;  
notching said P1 pole including the following steps:  
etching portions of said write gap layer utilizing  $C_2F_6$  as a component of an etchant gas;  
subsequently etching portions of said P1 pole; and  
conducting further fabrication steps to complete fabrication of said magnetic head.
2. A method for fabricating a magnetic head as described in claim 1 wherein said etching of said P1 pole is conducted using argon as an etchant gas.
3. A method for fabricating a magnetic head as described in claim 1 wherein said etching of said right gap layer is conducted utilizing  $C_2F_6/Ar$  as an etchant gas.
4. A method for fabricating a magnetic head as described in claim 3 wherein said  $C_2F_6/Ar$  etchant gas includes  $C_2F_6$  gas in a concentration range of from 50% to 90%.
5. A method for fabricating a magnetic head as described in claim 4 wherein said  $C_2F_6$  gas concentration range is from 70% to 80%.
6. A method for fabricating a magnetic head as described in claim 5 wherein said concentration of  $C_2F_6$  in said etchant gas is approximately 75%.

1 7. A method for fabricating a magnetic head as described in claim 3 wherein a Ni fluoride  
2 thin film layer is formed on said P2 pole tip during said write gap layer etching step.

1 8. A method for fabricating a magnetic head, including the steps of:  
2 fabricating portions of said magnetic head including a P1 pole, a write gap layer and a P2  
3 pole tip;  
4 notching said P1 pole including the following steps:  
5 etching portions of said write gap layer utilizing an ion beam that is formed with an  
6 etchant gas including C<sub>2</sub>F<sub>6</sub> and argon;  
7 subsequently etching portions of said P1 pole using argon as an etchant gas; and  
8 conducting further fabrication steps to complete the fabrication of said magnetic head.

1 ~~2~~ 9. A method for fabricating a magnetic head as described in claim ~~8~~ wherein said C<sub>2</sub>F<sub>6</sub>/Ar  
2 etchant gas includes C<sub>2</sub>F<sub>6</sub> gas in a concentration range of from 50% to 90%.

1 ~~3~~ 10. A method for fabricating a magnetic head as described in claim ~~9~~ wherein said C<sub>2</sub>F<sub>6</sub> gas  
2 concentration range is from 70% to 80%.

1 ~~4~~ 11. A method for fabricating a magnetic head as described in claim ~~10~~ wherein said  
2 concentration of C<sub>2</sub>F<sub>6</sub> in said etchant gas is approximately 75%.

1 12. A method for fabricating a magnetic head as described in claim 9 wherein said etching of  
2 said write gap layer is conducted in part with a first etchant ion beam angle away from normal of

3 from 5° to 30°, and in part with a second etchant ion beam angle of from 65° to 85°.

1 13. A method for fabricating a magnetic head as described in claim 12 wherein said first ion  
2 beam angle is from 10° to 20° and said second ion beam angle is from 70° to 75°.

1 14. A method for fabricating a magnetic head as described in claim 13 wherein said first ion  
2 beam angle is approximately 10°.

1 15. A method for fabricating a magnetic head as described in claim 12 wherein said C<sub>2</sub>F<sub>6</sub>/Ar  
2 ion beam is generated with an ion beam voltage of from 600-900 volts, and an ion beam current  
3 of from 600-1200 mA.

1 16. A method for fabricating a magnetic head as described in claim 15 wherein said ion beam  
2 voltage is in the range of 650-750 volts and said ion beam current is in the range of 900-1100  
3 mA.

1 17. A method for fabricating a magnetic head as described in claim 15 wherein a Ni fluoride  
2 thin film layer is formed on said P2 pole tip.

1 18. A method for fabricating a magnetic head, including the steps of:  
2 fabricating portions of said magnetic head including a P1 pole, a write gap layer and a P2  
3 pole tip;  
4 notching said P1 pole including the following steps:

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5 etching portions of said write gap layer utilizing an ion beam that is formed with an  
6 etchant gas including  $C_2F_6$  and argon, wherein said  $C_2F_6$  gas concentration range is from 70% to  
7 80%; and wherein said etching of said write gap layer is conducted in part with a first etchant ion  
8 beam angle away from normal of from  $5^\circ$  to  $30^\circ$ , and in part with a second etchant ion beam  
9 angle of from  $65^\circ$  to  $85^\circ$ ;  
10 subsequently etching portions of said P1 pole using argon as an etchant gas; and  
11 conducting further fabrication steps to complete the fabrication of said magnetic head.

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